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PROPOSED CLAIMS FOR U.S.S.N. 10/743,885

127. A prosthesis for replacement of at least part of a knee joint in a leg of a patient, the leg including a femur, a tibia and a mechanical axis, the prosthesis comprising:

(a) a femoral component adapted to fit on a distal end of the femur, the femoral component including a lateral condylar structure and a medial condylar structure, the lateral condylar structure defining a lateral condylar bearing surface and the medial condylar structure defining a medial condylar bearing surface; and

(b) an accommodation structure corresponding to a proximal end of the tibia, the accommodation structure configured to cooperate with the femoral component and comprising:

(i) a medial accommodation surface configured to cooperate with the medial condylar bearing surface; wherein the medial accommodation surface and the medial condylar bearing surface define a medial compartment; and

(ii) a lateral accommodation surface configured to cooperate with the lateral condylar bearing surface; the lateral accommodation surface comprising a posteriolateral proximal surface that slopes distally as the posteriolateral proximal surface progresses in a posterior direction; wherein the lateral accommodation surface and the lateral condylar bearing surface define a lateral compartment;

wherein the medial and lateral compartments are asymmetric in a frontal plane of the prosthesis when the prosthesis is installed such that a line between points at which the lateral condylar bearing surface contacts the lateral accommodation surface and at which the medial condylar bearing surface contacts the medial accommodation surface is oriented at an angle that is not orthogonal to the mechanical axis of the leg;

wherein a plurality of sagittal cross sections in the medial compartment are different in shape than a plurality of sagittal cross sections in the lateral compartment; and

wherein flexion of the prosthesis causes the lateral condylar bearing surface to migrate posteriorly on the lateral accommodation surface to cause the tibia to rotate interiorly with respect to the femur during flexion.

128. The prosthesis of claim 127, wherein the posteriolateral proximal surface includes a portion that is convex.

129. The prosthesis of claim 127, wherein the posteriolateral proximal surface includes a portion that is substantially flat.

130. The prosthesis of claim 127, wherein the posteriolateral proximal surface includes a portion that is concave.

131. The prosthesis of claim 127, wherein the medial accommodation surface is concave.

132. The prosthesis of claim 127, wherein the internal rotation of the tibia is at least substantially 8 degrees relative to the femur at substantially 130 degrees of flexion and greater flexion angles.

133. The prosthesis of claim 127, wherein the angle is approximately 3 degrees from a line that is orthogonal to the mechanical axis of the leg.

134. The prosthesis of claim 127, wherein the accommodation structure comprises a raised portion extending proximally and the femoral component comprises an anterior cam and a posterior cam, the posterior cam including a surface for cooperating with a posterior surface of the raised portion on the accommodation structure in order to assist in imparting internal rotation to the tibia relative to the femur at angles of flexion between the tibia and the femur of 50 degrees or greater.

135. The prosthesis of claim 134, wherein the posterior cam has an asymmetrical shape such that a lateral portion of the posterior cam is larger than a medial portion of the posterior cam.

136. The prosthesis of claim 127, further comprising a tibial component adapted to fit on the proximal end of the tibia and to support the accommodation structure.

137. The prosthesis of claim 127, wherein the accommodation structure is a bearing plate.

138. The prosthesis of claim 127, wherein the accommodation structure is adapted to fit on the proximal end of the tibia.

139. A prosthesis for replacement of at least part of a knee joint in a leg of a patient, the leg including a femur, a tibia and a mechanical axis, the prosthesis comprising:

(a) a femoral component adapted to fit on a distal end of the femur, the femoral component comprising:

(i) a lateral condylar structure and a medial condylar structure, the lateral condylar structure defining a lateral condylar bearing surface and the medial condylar structure defining a medial condylar bearing surface;

(ii) a posterior cam located between the lateral condylar structure and the medial condylar structure; wherein the posterior cam is asymmetric such that a lateral portion of the posterior cam is larger than a medial portion of the posterior cam; and

(iii) an anterior cam; and

(b) an accommodation structure corresponding to a proximal end of the tibia, the accommodation structure configured to cooperate with the femoral component and comprising:

(i) a raised portion adapted to cooperate with the anterior and posterior cams of the femoral component;

(ii) a medial accommodation surface configured to cooperate with the medial condylar bearing surface; wherein the medial accommodation surface and the medial condylar bearing surface define a medial compartment; and

(iii) a lateral accommodation surface configured to cooperate with the lateral condylar bearing surface; wherein the lateral

accommodation surface and the lateral condylar bearing surface define a lateral compartment;

wherein the medial and lateral compartments are asymmetric in a frontal plane of the prosthesis when the prosthesis is installed such that a line between points at which the lateral condylar bearing surface contacts the lateral accommodation surface and at which the medial condylar bearing surface contacts the medial accommodation surface is oriented at an angle that is not orthogonal to the mechanical axis of the leg; and

wherein flexion of the prosthesis causes the lateral condylar bearing surface to migrate posteriorly on the lateral accommodation surface to cause the tibia to rotate interiorly with respect to the femur during flexion.

140. The prosthesis of claim 139, wherein the lateral accommodation surface comprises a posteriolateral proximal surface that slopes distally as the posteriolateral proximal surface progresses in a posterior direction.

141. The prosthesis of claim 140, wherein the posteriolateral proximal surface includes a portion that is convex.

142. The prosthesis of claim 140, wherein the posteriolateral proximal surface includes a portion that is substantially flat.

143. The prosthesis of claim 140, wherein the posteriolateral proximal surface includes a portion that is concave.

144. The prosthesis of claim 139, wherein the internal rotation of the tibia is at least substantially 8 degrees relative to the femur at substantially 130 degrees of flexion and greater flexion angles.

145. The prosthesis of claim 139, wherein the angle is approximately 3 degrees from a line that is orthogonal to the mechanical axis of the leg.

146. The prosthesis of claim 139, further comprising a tibial component adapted to fit on the proximal end of the tibia and to support the accommodation structure.

147. The prosthesis of claim 139, wherein the accommodation structure is a bearing plate.

148. The prosthesis of claim 139, wherein the accommodation structure is adapted to fit on the proximal end of the tibia.

149. A prosthesis for replacement of at least part of a knee joint in a leg of a patient, the leg including a femur, a tibia and a mechanical axis, the prosthesis comprising:

(a) a femoral component adapted to fit on a distal end of the femur, the femoral component comprising:

(i) a lateral condylar structure and a medial condylar structure, the lateral condylar structure defining a lateral condylar bearing surface and the medial condylar structure defining a medial condylar bearing surface;

(ii) a posterior cam located between the lateral condylar structure and the medial condylar structure; wherein the posterior cam is asymmetric such that a lateral portion of the posterior cam is larger than a medial portion of the posterior cam; and

(iii) an anterior cam; and

(b) an accommodation structure corresponding to a proximal end of the tibia, the accommodation structure configured to cooperate with the femoral component and comprising:

(i) a medial accommodation surface configured to cooperate with the medial condylar bearing surface; wherein the medial accommodation surface and the medial condylar bearing surface define a medial compartment;

(ii) a lateral accommodation surface configured to cooperate with the lateral condylar bearing surface; the lateral accommodation surface comprising a posteriolateral proximal surface that slopes distally as the posteriolateral proximal surface progresses in a posterior

direction; wherein the lateral accommodation surface and the lateral condylar bearing surface define a lateral compartment; and

(iii) a raised portion adapted to cooperate with the anterior and posterior cams of the femoral component;

wherein the medial and lateral compartments are asymmetric in a frontal plane of the prosthesis when the prosthesis is installed such that a line between points at which the lateral condylar bearing surface contacts the lateral accommodation surface and at which the medial condylar bearing surface contacts the medial accommodation surface is oriented at an angle that is not orthogonal to the mechanical axis of the leg;

wherein a plurality of sagittal cross sections in the medial compartment are different in shape than a plurality of sagittal cross sections in the lateral compartment; and

wherein flexion of the prosthesis causes the lateral condylar bearing surface to migrate posteriorly on the lateral accommodation surface to cause the tibia to rotate inferiorly with respect to the femur during flexion.

150. The prosthesis of claim 149, wherein the posteriolateral proximal surface includes a portion that is convex.

151. The prosthesis of claim 149, wherein the posteriolateral proximal surface includes a portion that is substantially flat.

152. The prosthesis of claim 149, wherein the posteriolateral proximal surface includes a portion that is concave.

153. The prosthesis of claim 149, wherein the internal rotation of the tibia is at least substantially 8 degrees relative to the femur at substantially 130 degrees of flexion and greater flexion angles.

154. The prosthesis of claim 149, wherein the angle is approximately 3 degrees from a line that is orthogonal to the mechanical axis of the leg.

155. The prosthesis of claim 149, further comprising a tibial component adapted to fit on the proximal end of the tibia and to support the accommodation structure.

156. The prosthesis of claim 149, wherein the accommodation structure is a bearing plate.

157. The prosthesis of claim 149, wherein the accommodation structure is adapted to fit on the proximal end of the tibia.

158. The prosthesis of claim 149, wherein the medial accommodation surface is concave.